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A famous theorem of Macaulay characterizes the Hilbert functions of standard graded algebras. Much work has gone into generalizing Macaulay's Theorem. For example, it is well known what the Hilbert functions of finite sets of distinct, reduced points in projective n -space are. However, it is not known in general what the Hilbert functions of sets of *fat* points are. We will consider sets of reduced points lying on a pair of lines and discuss the Hilbert functions of the related double points. (Received August 06, 2007)